

# COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** California, Los Angeles (ZONES 8 / 9)  
**Incoming Water Temperature:** 60 deg F  
**Collector tilt/orientation:** 35 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/sqft of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications  | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|---|--|-------|-------|-------|-------|-------|-------|
|   | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b>                      |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)             | 3.3  | 5.0   | 7.3   | 9.3   | 12.0  | 14.8  | 17.6  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc) | 3.8  | 6.5   | 8.9   | 11.9  | 16.3  | 20.4  | 28.0  |
| Specific output:  |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                  | 418.9                                      | 405.3 | 394.1 | 384.7 | 375.1 | 362.7 | 349.2 |
| kWh/ft <sup>2</sup> Gobi/yr                                   | 122.8                                      | 118.8 | 115.5 | 112.7 | 109.9 | 106.3 | 102.3 |
| <b>Retirement/Nursing Homes (120° F Set Temp)</b>             |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)             | 1.6  | 2.5   | 3.7   | 4.8   | 6.0   | 7.5   | 9.4   |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc) | 2.1  | 3.1   | 4.6   | 5.9   | 7.6   | 9.2   | 11.3  |
| Specific output:  |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                  | 411.0                                      | 398.8 | 384.2 | 368.7 | 357.1 | 344.8 | 318.0 |
| kWh/ft <sup>2</sup> Gobi/yr                                   | 120.5                                      | 116.9 | 112.6 | 108.1 | 104.7 | 101.1 | 93.2  |
| <b>Hotel/Motel (125° F Set Temp)</b>                          |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)             | 1.6  | 2.3   | 3.1   | 4.2   | 5.2   | 6.2   | 7.9   |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc) | 1.9  | 2.9   | 4.2   | 5.7   | 7.1   | 8.8   | 11.3  |
| Specific output:  |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                  | 415.5                                      | 403.2 | 392.8 | 380.6 | 370.5 | 358.8 | 340.1 |
| kWh/ft <sup>2</sup> Gobi/yr                                   | 121.8                                      | 118.2 | 115.1 | 111.5 | 108.6 | 105.2 | 99.7  |
| <b>Laundry (130 ° F Set Temp) (NO HOT WATER RECIRC)</b>       |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed                           | 2.1  | 3.3   | 4.4   | 5.9   | 7.5   | 9.7   | 12.3  |
| Specific output:  |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                  | 415.1                                      | 401.1 | 391.1 | 378.3 | 365.5 | 349.4 | 321.3 |
| kWh/ft <sup>2</sup> Gobi/yr                                   | 121.7                                      | 117.6 | 114.6 | 110.9 | 107.1 | 102.4 | 94.2  |
| <b>Restaurant (140 ° F Set Temp) (NO HOT WATER RECIRC)</b>    |  |       |       |       |       |       |       |
| (* NO HOT WATER RECIRC)                                       |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meals served                     | 2.6  | 4.5   | 6.4   | 8.6   | 11.8  | 14.8  | 19.3  |
| Specific output:  |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                  | 414.2                                      | 392.5 | 374.4 | 350.5 | 330.6 | 315.4 | 293.9 |
| kWh/ft <sup>2</sup> Gobi/yr                                   | 121.4                                      | 115.0 | 109.7 | 102.7 | 96.9  | 92.4  | 86.1  |

# COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** California, San Francisco Bay (ZONE 3)  
**Incoming Water Temperature:** 60 deg F  
**Collector tilt/orientation:** 35 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications                             | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b> |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit:              | 3.7  | 5.6   | 8.6   | 11.4  | 14.5  | 18.3  | 23.5  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 401.1                                      | 383.2 | 356.0 | 332.1 | 324.2 | 313.6 | 292.3 |
| kWh/ft <sup>2</sup> Gobi/yr              | 117.6                                      | 112.3 | 101.7 | 97.3  | 95.0  | 91.9  | 85.7  |
| <b>Hotel/Motel (125° F Set Temp)</b>     |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Room:              | 1.6  | 2.7   | 3.8   | 5.0   | 6.4   | 8.0   | 10.3  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 385.6                                      | 362.0 | 342.6 | 329.6 | 318.7 | 308.4 | 284.9 |
| kWh/ft <sup>2</sup> Gobi/yr              | 113.0                                      | 106.1 | 100.4 | 96.6  | 93.4  | 90.4  | 83.5  |
| <b>Laundry (130 ° F Set Temp)</b>        |  |       |       |       |       |       |       |
| ft2 gobi/10 lbs. washed                  | 2.4  | 3.7   | 5.4   | 7.5   | 9.6   | 12.0  | 16.0  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 384.2                                      | 361.7 | 340.2 | 321.4 | 310.2 | 299.2 | 271.3 |
| kWh/ft <sup>2</sup> Gobi/yr              | 112.6                                      | 106.0 | 99.7  | 94.2  | 90.9  | 87.7  | 79.5  |
| <b>Restaurant (140 ° F Set Temp)</b>     |  |       |       |       |       |       |       |
| ft2 gobi/10 full meal served             | 2.9  | 5.0   | 7.8   | 10.7  | 13.8  | 18.1  | 24.1  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 382.1                                      | 358.3 | 326.9 | 308.1 | 293.8 | 279.4 | 254.2 |
| kWh/ft <sup>2</sup> Gobi/yr              | 112.0                                      | 105.0 | 95.8  | 90.3  | 86.1  | 81.9  | 74.5  |

## COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** PORTLAND, OR  
**Collector tilt/orientation:** 45 °tilt/ South facing roof  
**Incoming Water Temperature:** 53.1 ° F  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D  
**(\*) >100% IN SUMMER MONTHS**

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications                             | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |         |
|--|--|-------|-------|-------|-------|-------|---------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80% (*) |
| <b>Apartment Complex, (120 ° F Temp)</b> |  |       |       |       |       |       |         |
| ft <sup>2</sup> Gobi/ Unit:              | 5.3  | 8.9   | 13.1  | 18.3  | 26.0  | 35.7  | 45.9    |
| Specific output:                         |  |       |       |       |       |       |         |
| kBTU/ft <sup>2</sup> Gobi/yr             | 282.9                                      | 264.4 | 249.4 | 233.4 | 216.3 | 197.6 | 188.4   |
| kWh/ft <sup>2</sup> Gobi/yr              | 82.9                                       | 77.5  | 73.1  | 68.4  | 63.4  | 57.9  | 55.2    |
| <b>Hotel/Motel (125° F Set Temp)</b>     |  |       |       |       |       |       |         |
| ft <sup>2</sup> Gobi/ Room:              | 2.4  | 4.0   | 5.8   | 7.9   | 11.1  | 15.1  | 19.0    |
| Specific output:                         |  |       |       |       |       |       |         |
| kBTU/ft <sup>2</sup> Gobi/yr             | 282.2                                      | 258.3 | 241.9 | 228.6 | 211.2 | 190.7 | 185.1   |
| kWh/ft <sup>2</sup> Gobi/yr              | 82.7                                       | 75.7  | 70.9  | 67.0  | 61.9  | 55.9  | 54.2    |
| <b>Laundry (130 ° F Set Temp)</b>        |  |       |       |       |       |       |         |
| ft <sup>2</sup> gobi/10 lbs. washed      | 3.4  | 5.8   | 8.3   | 12.0  | 16.1  | 24.1  | 34.4    |
| Specific output:                         |  |       |       |       |       |       |         |
| kBTU/ft <sup>2</sup> Gobi/yr             | 281.5                                      | 255.6 | 238.2 | 220.4 | 204.7 | 180.8 | 157.2   |
| kWh/ft <sup>2</sup> Gobi/yr              | 82.5                                       | 74.9  | 69.8  | 64.6  | 60.0  | 53.0  | 46.1    |
| <b>Restaurant (140 ° F Set Temp)</b>     |  |       |       |       |       |       |         |
| ft <sup>2</sup> gobi/10 full meal served | 4.3  | 7.6   | 11.8  | 17.0  | 24.1  | 36.1  | 57.8    |
| Specific output:                         |  |       |       |       |       |       |         |
| kBTU/ft <sup>2</sup> Gobi/yr             | 284.6                                      | 252.1 | 228.9 | 210.5 | 191.8 | 167.5 | 140.5   |
| kWh/ft <sup>2</sup> Gobi/yr              | 83.4                                       | 73.9  | 67.1  | 61.7  | 56.2  | 49.1  | 41.2    |

## COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** Boston MA  
**Incoming Water Temperature:** 50.8 deg F  
**Collector tilt/orientation:** 45 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications                             | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b> |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit:              | 4.8  | 8.3   | 12.4  | 16.3  | 21.8  | 30.1  | 40.2  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 323.1                                      | 298.6 | 279.8 | 267.8 | 252.8 | 233.7 | 214.3 |
| kWh/ft <sup>2</sup> Gobi/yr              | 94.7                                       | 87.5  | 82.0  | 78.5  | 74.1  | 68.5  | 62.8  |
| <b>Hotel/Motel (125° F Set Temp)</b>     |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Room:              | 2.2  | 3.6   | 5.2   | 7.2   | 9.5   | 12.9  | 18.1  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 322.4                                      | 296.2 | 276.7 | 260.7 | 246.0 | 226.6 | 203.4 |
| kWh/ft <sup>2</sup> Gobi/yr              | 94.5                                       | 86.8  | 81.1  | 76.4  | 72.1  | 66.4  | 59.6  |
| <b>Laundry (130 ° F Set Temp)</b>        |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed      | 3.1  | 5.1   | 7.3   | 10.3  | 14.2  | 19.3  | 26.8  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 322.1                                      | 294.8 | 273.0 | 255.9 | 238.2 | 218.0 | 197.2 |
| kWh/ft <sup>2</sup> Gobi/yr              | 94.4                                       | 86.4  | 80.0  | 75.0  | 69.8  | 63.9  | 57.8  |
| <b>Restaurant (140 ° F Set Temp)</b>     |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meal served | 4.1  | 6.8   | 10.7  | 15.2  | 20.6  | 28.9  | 41.3  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 321.4                                      | 291.0 | 261.0 | 241.6 | 224.5 | 202.3 | 180.5 |
| kWh/ft <sup>2</sup> Gobi/yr              | 94.2                                       | 85.3  | 76.5  | 70.8  | 65.8  | 59.3  | 52.9  |

# COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** Phoenix AZ  
**Incoming Water Temperature:** 50.8 deg F  
**Collector tilt/orientation:** 45 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D  
 (\* Blue Sputter GOBI Collectors)

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications                             | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b> |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit:              | 2.1  | 3.2   | 4.4   | 6.0   | 7.6   | 9.3   | 11.1  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 507.9                                      | 494.7 | 465.4 | 452.7 | 448.7 | 440.4 | 430.9 |
| kWh/ft <sup>2</sup> Gobi/yr              | 148.9                                      | 145.0 | 136.4 | 132.7 | 131.5 | 129.1 | 126.3 |
| <b>Hotel/Motel (125° F Set Temp)</b>     |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Room:              | 1.0  | 1.5   | 2.1   | 2.7   | 3.1   | 4.0   | 5.0   |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 504.2                                      | 448.1 | 472.1 | 460.4 | 455.3 | 428.7 | 426.6 |
| kWh/ft <sup>2</sup> Gobi/yr              | 147.8                                      | 131.3 | 138.4 | 134.9 | 133.4 | 125.6 | 125.0 |
| <b>Laundry (130 ° F Set Temp)</b>        |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed      | 1.4  | 2.2   | 3.1   | 4.0   | 5.0   | 6.2   | 7.5   |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 502.1                                      | 484.4 | 467.3 | 454.7 | 443.2 | 433.9 | 423.6 |
| kWh/ft <sup>2</sup> Gobi/yr              | 147.2                                      | 142.0 | 137.0 | 133.3 | 129.9 | 127.2 | 124.2 |
| <b>Restaurant (140 ° F Set Temp)</b>     |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meal served | 2.1  | 3.1   | 4.4   | 5.9   | 7.4   | 9.2   | 10.9  |
| Specific output:                         |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr             | 494.7                                      | 478.6 | 459.1 | 442.2 | 429.8 | 419.3 | 408.3 |
| kWh/ft <sup>2</sup> Gobi/yr              | 145.0                                      | 140.3 | 134.6 | 129.6 | 126.0 | 122.9 | 119.7 |

## COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** Chicago IL  
**Incoming Water Temperature:** 51.5 °F  
**Collector tilt/orientation:** 45 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications                              | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|---|--|-------|-------|-------|-------|-------|-------|
|   | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b>  |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit:               | 4.7  | 8.0   | 11.6  | 15.8  | 21.0  | 28.3  | 38.5  |
| Specific output:                          |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr              | 336.1                                      | 313.2 | 295.1 | 280.4 | 263.8 | 246.3 | 222.6 |
| kWh/ft <sup>2</sup> Gobi/yr               | 98.5                                       | 91.8  | 86.5  | 82.2  | 77.3  | 72.2  | 65.2  |
| <b>Hotel/Motel (125° F Set Temp)</b>      |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Room:               | 2.1  | 3.5   | 5.1   | 6.9   | 9.0   | 11.7  | 16.8  |
| Specific output:                          |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr              | 332.9                                      | 310.4 | 290.9 | 273.7 | 258.6 | 240.4 | 211.9 |
| kWh/ft <sup>2</sup> Gobi/yr               | 97.6                                       | 91.0  | 85.3  | 80.2  | 75.8  | 70.5  | 62.1  |
| <b>Laundry (130 ° F Set Temp)</b>         |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed       | 3.0  | 4.8   | 7.3   | 10.0  | 13.4  | 17.8  | 25.4  |
| Specific output:                          |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr              | 331.6                                      | 309.2 | 286.8 | 268.0 | 251.1 | 231.7 | 205.8 |
| kWh/ft <sup>2</sup> Gobi/yr               | 97.2                                       | 90.6  | 84.1  | 78.5  | 73.6  | 67.9  | 60.3  |
| <b>Restaurant (140 ° F Set Temp)</b>      |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meals served | 3.9  | 6.2   | 8.5   | 12.4  | 17.0  | 24.6  | 35.4  |
| Specific output:                          |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr              | 340.2                                      | 323.1 | 303.2 | 276.4 | 254.6 | 225.3 | 197.0 |
| kWh/ft <sup>2</sup> Gobi/yr               | 99.7                                       | 94.7  | 88.9  | 81.0  | 74.6  | 66.0  | 57.7  |

# COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** Denver, CO  
**Incoming Water Temperature:** 51 °F  
**Collector tilt/orientation:** 35 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications   | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b>                           |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)                  | 3.8  | 5.9   | 9.3   | 12.2  | 16.3  | 21.2  | 28.6  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 4.6  | 7.0   | 10.1  | 14.4  | 18.1  | 23.2  | 32.1  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 404.0                                      | 383.9 | 350.6 | 337.2 | 322.3 | 301.8 | 279.6 |
| kWh/ft <sup>2</sup> Gobi/yr  | 118.4                                      | 112.5 | 102.8 | 98.8  | 94.5  | 88.5  | 81.9  |
| <b>Hotel/Motel (125° F Set Temp, 15 gpd per unit)</b>              |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/Room: (No Hot Water Recirc)                   | 1.8  | 2.8   | 3.9   | 5.1   | 6.5   | 8.6   | 11.3  |
| ft <sup>2</sup> Gobi/Room: (With 20% added Hot Water Recirc)       | 2.1  | 3.2   | 4.5   | 6.0   | 7.7   | 10.1  | 13.3  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 394.9                                      | 379.2 | 366.6 | 352.4 | 336.4 | 313.6 | 287.9 |
| kWh/ft <sup>2</sup> Gobi/yr  | 115.7                                      | 111.1 | 107.4 | 103.3 | 98.6  | 91.9  | 84.4  |
| <b>Laundry (130 ° F Set Temp, 20 gpd per 10 lbs washed)</b>        |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed                                | 2.4  | 3.8   | 5.6   | 7.3   | 9.5   | 12.5  | 16.6  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 394.3                                      | 378.5 | 361.9 | 347.7 | 330.1 | 307.0 | 278.8 |
| kWh/ft <sup>2</sup> Gobi/yr  | 115.6                                      | 110.9 | 106.1 | 101.9 | 96.7  | 90.0  | 81.7  |
| <b>Restaurant (140 ° F Set Temp, 2.4 gpd per full meal served)</b> |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meals served                          | 3.4  | 5.3   | 7.7   | 10.3  | 14.0  | 18.1  | 22.8  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 389.6                                      | 374.0 | 355.8 | 338.2 | 319.2 | 292.0 | 265.2 |
| kWh/ft <sup>2</sup> Gobi/yr  |  |       |       |       |       |       |       |

# COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** New York, NY  
**Incoming Water Temperature:** 51 °F  
**Collector tilt/orientation:** 35 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications   | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b>                           |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)                  | 5.4  | 8.0   | 10.7  | 14.7  | 18.7  | 25.4  | 34.8  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 6.7  | 9.4   | 13.4  | 17.4  | 22.7  | 29.4  | 38.8  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 322.5                                      | 304.9 | 294.8 | 277.4 | 261.6 | 235.4 | 204.4 |
| kWh/ft <sup>2</sup> Gobi/yr  | 94.5                                       | 89.4  | 86.4  | 81.3  | 76.7  | 69.0  | 59.9  |
| <b>Retirement/Nursing Homes (120° F Set Temp)</b>                  |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)                  | 2.4  | 4.0   | 5.6   | 8.0   | 10.0  | 13.7  | 20.1  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 3.2  | 4.8   | 7.2   | 8.8   | 12.0  | 16.1  | 22.5  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 327.8                                      | 307.5 | 290.1 | 273.6 | 259.1 | 233.5 | 191.2 |
| kWh/ft <sup>2</sup> Gobi/yr  | 96.1                                       | 90.1  | 85.0  | 80.2  | 75.9  | 68.4  | 56.0  |
| <b>Hotel/Motel (125° F Set Temp, 15 gpd per unit)</b>              |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/Room: (No Hot Water Recirc)                   | 2.0  | 3.3   | 4.7   | 6.7   | 8.4   | 11.4  | 16.7  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 2.7  | 4.0   | 6.0   | 7.4   | 10.0  | 13.4  | 18.7  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 327.8                                      | 307.3 | 289.7 | 274.0 | 259.4 | 233.9 | 191.1 |
| kWh/ft <sup>2</sup> Gobi/yr  | 96.1                                       | 90.1  | 84.9  | 80.3  | 76.0  | 68.6  | 56.0  |
| <b>Laundry (130 ° F Set Temp, 20 gpd per 10 lbs washed)</b>        |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed                                | 3.5  | 4.0   | 7.1   | 9.8   | 12.5  | 17.0  | 23.2  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 322.8                                      | 305.4 | 290.2 | 276.1 | 260.1 | 233.2 | 197.7 |
| kWh/ft <sup>2</sup> Gobi/yr  | 94.6                                       | 89.5  | 85.1  | 80.9  | 76.2  | 68.3  | 57.9  |
| <b>Restaurant (140 ° F Set Temp, 2.4 gpd per full meal served)</b> |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meals served                          | 4.8  | 6.4   | 9.7   | 11.8  | 16.1  | 21.4  | 31.0  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 324.2                                      | 307.4 | 283.7 | 280.5 | 259.4 | 189.5 | 193.6 |
| kWh/ft <sup>2</sup> Gobi/yr  | 95.0                                       | 90.1  | 83.1  | 82.2  | 76.0  | 55.5  | 56.7  |



# COMMERCIAL SOLAR WATER SIZING CHART

COLLECTOR RECOMMENDATIONS IN FT<sup>2</sup> GOBI (CLOSED-LOOP, GLYCOL SYSTEMS)

**Location:** Baltimore, MD  
**Incoming Water Temperature:** 51 °F  
**Collector tilt/orientation:** 35 °tilt/ South facing roof  
**Storage Capacity:** 1.5 gallons/ft<sup>2</sup> of Gobi  
**Water Usage Loads** per CSI Thermal Handbook, Appendix D

| Application             | Assumptions (Gallons Per Day) |
|-------------------------|-------------------------------|
| Apartment               | 35 per unit                   |
| Retirement/Nursing Home | 18 Per room                   |
| Hotel/Motel             | 15 per room                   |
| Laundry                 | 20 per 10 lb per machine      |
| Resturant               | 24 per 10 meals per day       |

| Applications   | Yearly Solar Fractions (Solar Output/Load) |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|
|  | 20%  | 30%   | 40%   | 50%   | 60%   | 70%   | 80%   |
| <b>Apartment Complex, (120 ° F Temp)</b>                           |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)                  | 4.2  | 6.7   | 9.6   | 12.7  | 16.3  | 21.4  | 27.3  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 5.4  | 8.0   | 11.4  | 15.1  | 19.4  | 25.4  | 32.5  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 356.0                                      | 338.4 | 323.7 | 308.5 | 293.0 | 270.6 | 248.4 |
| kWh/ft <sup>2</sup> Gobi/yr  | 104.3                                      | 99.2  | 94.9  | 90.4  | 85.9  | 79.3  | 72.8  |
| <b>Retirement/Nursing Homes (120° F Set Temp)</b>                  |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/ Unit: (No Hot Water Recirc)                  | 2.2  | 3.6   | 5.1   | 6.8   | 8.8   | 11.2  | 15.3  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 2.6  | 4.2   | 5.9   | 7.7   | 10.4  | 13.7  | 18.5  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 357.6                                      | 337.5 | 319.8 | 305.3 | 289.5 | 271.1 | 239.9 |
| kWh/ft <sup>2</sup> Gobi/yr  | 104.8                                      | 98.9  | 93.7  | 89.5  | 84.8  | 79.5  | 70.3  |
| <b>Hotel/Motel (125° F Set Temp, 15 gpd per unit)</b>              |  |       |       |       |       |       |       |
| ft <sup>2</sup> Gobi/Room: (No Hot Water Recirc)                   | 1.8  | 3.0   | 4.2   | 5.7   | 7.4   | 9.4   | 12.7  |
| ft <sup>2</sup> Gobi/ Unit: (With 20% added Hot Water Recirc)      | 2.3  | 3.7   | 5.0   | 6.7   | 8.4   | 11.0  | 15.7  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 357.6                                      | 337.5 | 319.8 | 305.3 | 289.5 | 271.1 | 239.9 |
| kWh/ft <sup>2</sup> Gobi/yr  | 104.8                                      | 98.9  | 93.7  | 89.5  | 84.8  | 79.5  | 70.3  |
| <b>Laundry (130 ° F Set Temp, 20 gpd per 10 lbs washed)</b>        |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 lbs. washed                                | 2.8  | 4.5   | 6.3   | 8.5   | 10.9  | 13.8  | 18.3  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 356.1                                      | 338.6 | 320.4 | 307.3 | 291.3 | 272.7 | 243.5 |
| kWh/ft <sup>2</sup> Gobi/yr  | 104.4                                      | 99.2  | 93.9  | 90.1  | 85.4  | 79.9  | 71.4  |
| <b>Restaurant (140 ° F Set Temp, 2.4 gpd per full meal served)</b> |  |       |       |       |       |       |       |
| ft <sup>2</sup> gobi/10 full meals served                          | 3.5  | 5.8   | 8.2   | 10.7  | 13.9  | 17.6  | 24.7  |
| Specific output:   |  |       |       |       |       |       |       |
| kBTU/ft <sup>2</sup> Gobi/yr                                       | 357.3                                      | 337.6 | 317.4 | 309.1 | 291.2 | 272.1 | 243.4 |
| kWh/ft <sup>2</sup> Gobi/yr  | 104.7                                      | 98.9  | 93.0  | 90.6  | 85.3  | 79.7  | 71.3  |